Smoking status and factors influencing smoking cessation among primary school parents: A cross-sectional study

Arife Ezgi Evcen[a,*], Recep Evcen[b], Kamile Marakoglu[a]

[a]Selcuk University, Faculty of Medicine, Department of Family Medicine, Konya, Türkiye
[b]Recep Tayyip Erdogan University, Education and Research Hospital, Department of Allergy and Clinical Immunology, Rize, Türkiye

Abstract

Aim: This study aims to determine smoking status among primary school parents and identify factors influencing smoking cessation. Additionally, the study seeks to increase awareness about the transtheoretical model and examine its role in the smoking cessation process.

Materials and Methods: The study was conducted with 2,354 parents of students from a primary school in Konya. Participants completed surveys assessing smoking status, attitudes towards quitting, and levels of awareness. Factors related to smoking status, including age, gender, education level, occupation, and alcohol use, were analyzed. Smokers quit attempts were associated with the stages of the transtheoretical model, and whether they sought professional help was evaluated.

Results: Of the participants, 33.1% (n=780) were smokers. The average age of smokers was 36.6±4.61, and the frequency of smoking was higher among men than women. 39% of the participants were low-level smokers. Significant associations were observed between smoking status and factors such as age, gender, education level, occupation, and alcohol use (p<0.001). The majority of smokers attempted to quit using the "sudden cessation" method, with a low rate of seeking professional help. Most of those who successfully quit also used the "sudden cessation" method. 31.4% of participants had never attempted to quit smoking. As the number of quit attempts increased, participants were observed to become more prepared to quit smoking (p<0.001). According to the transtheoretical model, most individuals were in the precontemplation stage.

Conclusion: The frequency of smoking is higher among men and decreases as education level increases. Most participants attempted to quit smoking on their own, with a low level of seeking professional help. Multiple attempts to leave have been shown to increase the likelihood of success, and awareness of the harms of passive smoking has significantly influenced smoking behavior.

Introduction

According to data from the World Health Organization (WHO), while global cigarette consumption is declining, it is increasing in Eastern Mediterranean and African countries [1]. In 2017, the smoking rate among men was 43.6%. It is expected that this rate will decrease to 26.5% by 2025 [2]. However, the percentage of individuals aged 15 and over who smoke in Türkiye increased from 28.0% in 2019 to 28.3% in 2022. In 2022, the smoking rates were found to be 41.3% among men and 15.5% among women [3]. People exposed to tobacco smoke can also face serious health issues. Secondhand tobacco smoke (SHS) increases the risk of breast, bladder, and lung cancers, as well as heart at-

tacks and strokes. In children, it raises the risks of asthma, lower respiratory infections, ear infections, and sudden infant death syndrome [4].

Nicotine use disorder is a chronic disease that requires long-term treatment and monitoring. Nicotine is a highly addictive substance that can cause severe withdrawal symptoms during the quitting process. Therefore, successfully quitting smoking often involves coordinated efforts from various professions and sectors [5]. Utilizing the Transtheoretical Model can be beneficial for effectively approaching individuals unwilling to quit smoking and experiencing a lack of motivation. This model divides the smoking cessation process into five stages. The first three stages are crucial for assessing smokers. In the precontemplation stage, the individual does not plan to quit smoking within the next six months. Motivational inter-

*Corresponding author:
Email address: aezgergn@gmail.com (Arife Ezgi Evcen)

views and discussions about the benefits of quitting can be helpful for these individuals. In the contemplation stage, the person is considering quitting smoking within the next six months. It is crucial to provide support and encouragement to facilitate their movement towards taking action at this stage. The preparation stage includes individuals who have considered quitting smoking within the past month. These individuals have also made some attempts to quit. At this stage, providing information on smoking cessation methods can be beneficial [6].

This study aims to identify the smoking status of primary school parents, examine the factors affecting smoking, and determine the readiness of smokers to quit. Additionally, the study seeks to raise awareness about smoking cessation and understand the reasons for motivation deficiency.

Materials and Methods

The study is a descriptive cross-sectional study. Before the study, ethical approval was obtained from the Selçuk University Faculty of Medicine Non-Drug and Non-Medical Devices Research Ethics Committee (decision no. 2019/06, date: 22/05/2019). It included all parents participating in the "Mom, Dad is Quitting Smoking" project, initiated at a voluntary primary school in Konya. Out of the 2,887 parents who participated in the project, 533 were excluded from the study due to missing data. The population of this study consists of 151,451 primary school students in the 2020-2021 academic years. Based on previous research findings on the prevalence of tobacco use among primary school teachers [7], the smoking prevalence was found to be 37%. Considering a 5% margin of error, a design effect of 2, and a 99.9% confidence level, the minimum required sample size was calculated to be 2006. The OpenEpi software was used to determine the sample size. Parents completed a 65-item questionnaire, which included socio-demographic characteristics. The Turkish version of the 2007-developed questions was used to assess the gradual changes in the quitting process among current and former smokers [8].

The Fagerström Nicotine Dependence Test (FNDT) was used to assess the level of nicotine dependence among smoking parents. The stages of change were categorized as follows: Precontemplation (currently smoking but not considering quitting in the next six months), Contemplation (currently smoking and considering quitting in the next six months but not within the next month), and Preparation (currently smoking and planning to leave within the next month). Nicotine dependence was classified into five categories based on the total scores: very low (0-2 points), low (3-4 points), moderate (5 points), high (6-7 points), and very high (8-10 points). Open-ended and closed-ended questions were asked to assess the harms of smoking, the perception of secondhand smoke, and household smoking rules. Those who quit smoking were asked how long they had not smoked, the method they used to leave, and the most compelling reasons for quitting.

Classroom teachers distributed the surveys to parents. Each parent was asked to sign informed consent forms compliant with the World Medical Association's Declaration of Helsinki. For any missing or inconsistent responses, parents were contacted by phone to verify their answers.

Statistical analysis

All statistical analyses were conducted using IBM SPSS 21.0 (Statistical Package for the Social Sciences). Before analysis, the normality of the data was checked using the Shapiro-Wilk test and Q-Q plots. Descriptive statistics for numerical variables were presented as mean $\pm$ standard deviation or median (minimum-maximum), while categorical variables were presented as frequency (n) and percentage (%).

In this study, the demographic and smoking characteristics of the groups were compared based on smoking status and readiness to quit smoking using one-way ANOVA and pearson chi-square test. When significant differences were found, pairwise comparisons between groups were conducted using the tukey post-hoc test for one-way ANOVA and chi-square post-hoc analysis. Bonferroni correction was applied to control for multiple comparisons for the chi-square test. Binary logistic regression analysis was employed to identify potential risk factors associated with smoking status. A p-value of <0.05 was considered statistically significant.

Results

The average age of the participants was 35.5 ± 4.93 years (min: 22; max: 49). Of the participants, 99.4% (n=2,340) were married, and 0.6% (n=14) were divorced. By education level, 36.1% had completed primary school, 22.9% had completed middle school, 19% had completed high school, and 22% had a university degree or higher. Among men, 12.3% were civil servants, 37.6% were workers, and 50.1% were self-employed. Among women, 7% were civil servants, 2% were workers, 2.1% were self-employed, and 88.9% were housewives. Alcohol consumption was absent in 95.5% of participants, whereas 4.5% reported drinking. Thirty-three percent of the participants (n=780) were smokers. The average age of smokers was higher than that of non-smokers. The frequency of smoking was significantly higher among men compared to women (p<0.001). The frequency of smoking decreased with increasing educational levels. Smoking was most prevalent among both men and women in the trades/self-employed/farmer group. Among those who consumed alcohol, 86% were smokers (Table 1).

The median age at which participants started smoking was 18, and they had been smoking for an average of 17.5 ± 6.07 years. Table 2 summarizes the age at which participants began smoking, the duration of their smoking, the number of cigarettes smoked per day, and the categories of the FNDT.

Of the 535 participants who attempted to quit smoking, 47.9% tried the sudden cessation method. Of these individuals, 89.5% (n=479) did not receive professional support during the quitting process (Table 3).

The characteristics of the participants who quit smoking are examined. The most common reason for the decision to quit was "health problems". Among the quitting methods, the most preferred approach was the "sudden cessation" method, with a rate of 71.5% (Table 4).

The readiness to quit smoking is compared with the characteristics of quit attempts, showing a statistically significant difference (p<0.001). As the number of quit attempts

Table 1. Comparison of smoking status with socio-demographic characteristics of participants.

Socio-demographic characteristics	Smokers (n:780)[A]	Former Smokers (n:207)[B]	Non-Smokers (n :1,282)[C]		Post-hoc***		
	n (%)	n (%)	n (%)	p	pA-B	pA-C	pB-C
Age (years)	36.6 ± 4.6	37.9 ± 4.9	34.5 ± 4.8	**<0.001***	**0.003**	**<0.001**	**<0.001**
Gender							
Female	107 (9.1)	44 (3.7)	1026 (87.2)	**<0.001****	**0.008**	**<0.001**	**<0.001**
Male	673 (57.2)	163 (13.8)	341 (29)				
Marital Status							
Married	733 (33)	206 (8.8)	1361 (58.2)	**0.408****	1.000	0.247	1.000
Divorced	7 (50)	1 (7.1)	6 (42.9)				
Education Level							
Primary School	300 (35.3)	57 (6.7)	493 (58)	**<0.001****	**<0.001**	**0.010**	**<0.001**
Middle School	173 (32)	31 (5.7)	336 (62.2)				
High School	166 (37.1)	51 (11.4)	230 (51.5)				
University	141 (27.3)	68 (13.2)	308 (59.6)				
Occupation M. Occupations							
Gov. Emp.	46 (31.7)	29 (20)	70 (48.3)	**<0.001****	**<0.001**	**<0.001**	0.744
Worker	259 (58.6)	62 (14)	121 (27.4)				
SE/Farmer	368 (62.4)	72 (12.2)	150 (25.4)				
F. Occupations							
Housewife	90 (8.6)	32 (3.1)	925 (88.3)	**0.006****	0.336	0.094	**0.003**
Gov. Emp.	10 (12.2)	8 (9.8)	64 (78)				
Worker	2 (8.7)	2 (8.7)	19 (82.6)				
SE/Farmer	5 (20)	2 (8)	18 (72)				
Alcohol Consumption							
Non-User	688 (30.6)	198 (8.8)	1361 (60.6)	**<0.001****	**0.002**	**<0.001**	**<0.001**
User	92 (86)	9 (8.4)	6 (5.6)				

*: One Way ANOVA Test; **: Pearson Chi-square Test, ***: Tukey Post-hoc Test for One Way ANOVA, Chi-square Post-hoc Analysis.

Table 2. Smoking characteristics of smokers.

	Mean ± SD / Median (min-max)	n (%)
Age of Starting Smoking (years)	180 (7-37)	
Duration of Smoking (years)	175 ± 607	
Daily number of cigarettes	16 (2-50)	
Pack-years	17 (1-70)	
FNDT Scores (mean)	30 (0-10)	
Money Spent on Cigarettes (TL)	300 (30-1215)	
FNDT Scores (categorical)		
Very Low		304 (39)
Low		196 (25.1)
Moderate		89 (11.4)
High		119 (15.3)
Very High		72 (9.2)

FNDT; Fagerström Nicotine Dependence Test, SD; Standard Deviation, TL; Turkish Lira.

increased, the likelihood of being in the preparation stage also rose (p<0.001). Additionally, 56.8% (n=167) of those seeking professional help were in the preparation stage (Table 5).

Factors influencing smoking risk among participants are examined in Table 6. The frequency of smoking among men was approximately 19 times higher than that among women (p<0.001). Compared to those with a university degree or higher, the risk of smoking was 32% higher for primary school graduates and 57% higher for high school graduates (p=0.023; p=0.002). The risk of smoking was four times higher for those whose spouses smoked com-

Table 3. Smoking cessation attempts and professional help status of participants.

	n (%)
Smoking Cessation Attempts	256 (47.9)
Suddenly	163 (30.5)
Gradually	34 (6.4)
Nicotine Patch	22 (4.1)
Nicotine Gum	14 (2.6)
Patch and Gum	13 (2.4)
Varenicline (Champix)	29 (5.4)
Bupropion (Zyban)	4 (0.7)
Biorezonance	
Received Professional Help	
Yes	56 (10.5)
No	479 (89.5)
Total	535 (100)

Table 4. Characteristics of participants who quit smoking.

	n (%)
Reasons for Quitting	
Health Problems	128 (49.4)
Social Pressure	54 (20.8)
Cigarette Prices	48 (18.5)
Doctor's Advice	19 (9.2)
Smoking Area Restrictions	10 (3.9)
Total	259 (100)
Smoking Cessation Attempts	
Suddenly	148 (71.5)
Gradually	38 (18.4)
Nicotine Patch	3 (1.4)
Nicotine Gum	2 (1)
Patch and Gum	3 (1.4)
Varenicline (Champix)	6 (2.9)
Bupropion (Zyban)	4 (1.9)
Biorezonance	3 (1.4)
Total	207 (100)

pared to those whose spouses did not (p<0.001). The risk of smoking was also three times higher for those who always allowed smoking in the home compared to those who never allowed it (p<0.001). Additionally, the risk of smoking was 16 times higher among those who were not aware of the harms of passive smoking compared to those who were aware (p<0.001).

Discussion

This study examined smoking status, readiness to quit smoking, and factors affecting smoking behavior among primary school parents. The findings revealed that smoking frequency was higher among men compared to women. Additionally, smoking rates decreased with higher educational levels, and most smokers attempted to quit without professional help. Furthermore, awareness of the harms of passive smoking was found to significantly influence smoking behavior.

In the current study, the smoking frequency was consistent with that of the general population of Türkiye. In contrast, the smoking rate among women was lower compared to the national average [9]. The lower smoking rate among women compared to other studies may be attributed to the geographical and demographic characteristics of the participants. In some sociocultural contexts, smoking among women is perceived as shameful. Additionally, the lower smoking rates among women in our study may be due to their reduced participation in the workforce and lack of economic independence. It is also possible that smoking women provided inaccurate answers to survey questions to conceal their habits from their spouses or children.

In this study, it was found that smoking frequency decreased with increasing educational levels. Other studies have also demonstrated a relationship between educational level and smoking frequency. Education positively affects smoking rates by reducing the likelihood of smoking [10-12]. Higher levels of education may contribute to a reduction in smoking frequency by increasing awareness of the risks and harms associated with smoking.

This study found a high frequency of smoking among self-employed individuals compared to other groups in both genders. Other studies have also shown that smoking rates are higher among self-employed individuals compared to those working in enclosed spaces [11, 13]. The results suggest that smoking bans in indoor and office environments have reduced smoking rates in these occupational groups. Additionally, work conditions characterized by high psychosocial stress, manual labor, and low-skilled service sectors are more likely to trigger smoking behavior [14, 15].

In this study, it was observed that alcohol use increases the frequency of smoking. Other research also indicates that higher alcohol consumption is associated with increased smoking rates [16, 17]. When individuals seek help to quit smoking, it is essential to assess whether they are also using alcohol.

In our study, it was found that most participants who smoked attempted to quit on their own and rarely sought professional help. Previous studies have emphasized that personal effort is important in the process of quitting smoking [18, 19]. These results highlight the need for greater awareness and information for smokers regarding professional help and treatment options.

As the number of smoking quit attempts increased among participants, the likelihood of being in the preparation stage, according to the transtheoretical model, also increased. Campbell et al. also found a significant relationship between the number of quit attempts and being in the preparation stage in their study [20]. Attempting to quit smoking multiple times can, contrary to expectations, serve as a source of motivation. Individuals who invest more effort in quitting tend to become better prepared. Studies show that former smokers often make multiple attempts before successfully quitting [21]. Smoking frequency was higher among individuals with smoking partners compared to those with non-smoking partners. Studies also show that smoking is more frequent in couples where both partners smoke [22, 23]. The smoking status of partners should be assessed for those considering quitting. Both partners should be encouraged to join

Table 5. Relationship between readiness to quit smoking and characteristics of smoking cessation attempts.

Quit attempt characteristics	Pre-contemplation n (%)	Contemplation n (%)	Preparation n (%)	Post-hoc*** p	pA-B	pA-C	pB-C
Number of	Attempts						
None	164 (66.9)	32 (13.1)	49 (20)				
1	88 (41.5)	37 (17.5)	87 (41)				
2-3	77 (35.6)	52 (24.1)	87 (40.3)	<0.001*	<0.001	<0.001	0.060
4 and above	34 (31.8)	16 (15)	57 (53.3)				
Desire for	Help with	Quitting					
Yes	78 (26.5)	49 (16.7)	167 (56.8)				
No	285 (58.6)	88 (18.1)	113 (23.3)	<0.001*	0.001	<0.001	<0.001
Total	363 (46.5)	137 (17.6)	280 (35.9)				

*: Pearson Chi-square Test, **: Post-hoc analysis for the Chi-square test.

Table 6. Logistic regression analysis of factors affecting smoking.

	Odds Ratio (%95 Cl)	p
Gender		
Female	Reference	
Male	18.924 (14.917-24.008)	<0.001
Education Level		
Primary School	1.329 (1.040-1.699)	0.023
Middle School	1.125 (0.858-1.475)	0.395
High School	1.577 (1.189-2.090)	0.002
University	Reference	
Occupation (Male)		
Government Employee	Reference	
Worker	3.257 (2.119-5.008)	<0.001
Self-employed/Farmer	3.733 (2.459-5.669)	<0.001
Occupation (Female)		
Housewife	Reference	
Government Employee	1.606 (0.797-3.236)	0.185
Worker	1.082 (0.248-4.719)	0.917
Self-employed/Farmer	2.855 (1.035-7.871)	0.043
Spouse's Smoking Status		
Non-smoker	Reference	
Smoker	4.232 (2.281-7.854)	<0.001
Former Smoker	1.427 (0.677-3.009)	0.351
Household Smoking Status		
Always	3.319 (2.565-4.295)	<0.001
Sometimes	1.900 (1.556-2.320)	<0.001
Never	Reference	
Awareness of Passive Smoking Risks		
Yes	Reference	
No	16.286 (11.153-23.782)	<0.001

smoking cessation treatments together, as this can help in successfully quitting and preventing relapse.

People who think passive smoking is harmful have a lower risk of smoking. McIntire et al. also observed a reduction in smoking frequency as awareness of the dangers of passive smoking increased [24]. Informing people about passive smoking and raising awareness can be an essential source of motivation for quitting smoking.

Our study has some limitations. First, since the study was conducted at a single volunteer school, the results may not fully reflect the entire population. Second, there is a possibility that participants may not have provided candid answers to survey questions, especially those involving personal and sensitive topics such as motivation during the smoking cessation process.

Conclusion

In conclusion, many factors influence smoking behavior. Partner smoking can trigger smoking, and secondhand smoke exposure continues in many households. Educating smokers about this issue can enhance their motivation to quit. When individuals seek help to quit smoking, their occupation and education level should be considered. Our study found that multiple attempts to quit increase the likelihood of success. With the right approach, smokers can quit quickly and easily. This approach, which classifies individuals according to the transtheoretical model, will also assist healthcare professionals. Conversations that guide smokers to the preparation stage will raise awareness about quitting smoking.

Ethical approval

Selçuk University Faculty of Medicine Non-Drug and Non-Medical Devices Research Ethics Committee approved the study protocol (decision no. 2019/06, date: 22/05/2019).

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